Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	WT Docket No. 95-70
Amendment of Parts 22, 90, and 94	)	RM-8200
of the Commission's Rules to Permit	)	
Routine Use of Signal Boosters	)	

COMMENTS OF MOTOROLA, INC.

Motorola, Inc. ("Motorola"), by its attorneys, herewith submits its comments on the above-captioned notice of proposed rulemaking.[1] This *Notice* solicits comment on "expand[ing] the use of signal boosters to Part 22 common carrier paging operations at 931-932 MHz, to Part 90 land mobile radio operations in all Part 90 frequency bands above 150 MHz, to Part 90 paging operations at 929-930 MHz, and to Part 94 multiple address system operations in the 928-960 MHz band."[2] Under the *Notice* proposals, licensees in these bands would be routinely authorized to use Class A (narrowband) or Class B (broadband) repeaters operating at a total output power level of up to 500 mW without additional licensing procedures. As discussed below, Motorola supports this measure because it will provide additional flexibility to licensees to accommodate terrain and propagation variations without

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[1] Amendment of Parts 22, 90, and 94 of the Commission's Rules to Permit Routine Use of Signal Boosters, WT Docket No. 95-70 (rel. June 22, 1995) ["*Notice*"]. Although comments and reply comments in this docket were originally due on July 14, 1995, and August 1, 1995, the Commission extended these dates, respectively, to August 14, 1995, and September 1, 1995. *See* Order Extending Comment and Reply Comment Periods, WT Docket No. 95-70 (July 12, 1995).

[2] *Notice* at ¶5.

causing significant potential for detrimental interference. Motorola suggests, however, that it would be beneficial to: (i) raise the power limits for signal boosters to 5 W; (ii) allow the use of signal translators in additional to signal boosters; and, (iii) require licensees utilizing signal boosters and translators to maintain records to assist in the event interference is encountered.

Motorola has been a long time proponent of allowing licensees additional technical flexibility to deal with unusual terrain or propagation conditions within licensed service areas. Motorola, for example, supported TX RX System, Inc.'s original petition for rulemaking that formed the basis for this *Notice* by the Commission.[3] As the Commission has noted, "[s]ignal boosters have proven to be a viable and practical way to resolve signal coverage problems caused by natural or man-made obstacles thereby allowing licensees to make maximum use of radio systems."[4] Specifically, "signal boosters may be used to fill in 'dead spots' in locations such as valleys, tunnels, below-ground parking facilities, or inside cargo vessels and aircraft hangers."[5] Motorola therefore continues to support expanded use of signal boosters by both commercial mobile radio service and private mobile radio service licensees where such devices do not cause interference to other nearby co-channel or adjacent channel licensees.

Motorola also observes that the use of signal boosters has been successfully implemented in several radio services. For example, signal boosters are allowed on the ten

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[3] See Comments of Motorola, Inc. Regarding Petition for Rule Making of TX RX Systems, Inc., RM-8200 (Apr. 19, 1993).

[4] *Notice* at ¶5.

[5] *Id.* at ¶2.

UHF "airport" channels licensed under Part 90 as well as in the cellular radio service, as long as the booster does not extend the licensee's cellular geographic service area contour. Moreover, both narrowband and broadband PCS licensees appear to be implicitly permitted to utilize signal boosters and translators, as long as their signal level at the border of their markets is 47 dBu or less.[6] The use of signal boosters in these services has demonstrated the great benefits of signal boosters in providing an economical means for addressing weak coverage due to signal propagation problems.

As the Commission has noted, the potential for interference from signal boosters is limited if minimal precautions are taken. First, the Commission is properly permitting only the deployment of type-accepted signal boosters.[7] Motorola believes the type acceptance process will adequately ensure that signals from power boosters and translators conform to the emission mask criteria governing other transmitters in a service, and therefore that no interference to adjacent channel licensees will be caused. Moreover, because the *Notice* explicitly limits the expanded use of signal boosters to areas within a licensee's existing service area, no interference is likely to be caused to any other co-channel licensees.

Indeed, because the precautions proposed for the use of signal boosters adequately protect against interference, Motorola believes the additional 500 mW limitation on the power

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[6] Although the PCS regulations do not explicitly address signal boosters and translators, the degree of technical flexibility afforded to such licensees would appear to include the authorization to use such devices. The Commission should, however, explicitly clarify that such use is permitted.

[7] *Id.* at ¶11.

of signal boosters may not be necessary. In certain circumstance, 500 mW may not be sufficient to cover large "dead spots" within a service area (*e.g.*, a deep valley) or the full length of some underground structures and tunnels. Increasing the permitted power to 5 W would provide additional flexibility in this regard and, because the contour of the signal booster would still be required to be within the service area of the licensee, would not significantly increase the potential for interference.

Regardless of the power limit of signal boosters, the widespread deployment of additional transmitting devices could lead to some interference caused by propagation anomalies or other intermodulation effects. While Motorola does not view this potentiality as being severe enough to restrict the use of such devices, sound public policy dictates making some effort to track the deployment of additional transmitting devices. At the same time, imposing often cumbersome formal licensing procedures on the use of signal boosters would severely restrict the utility and benefits of these devices. Instead, Motorola suggests that licensees should be required to keep records on the locations of signal boosters that would be made available to other licensees in the event some interference is encountered. Motorola notes that similar recordkeeping obligations are the only site-specific requirements currently imposed on PCS licensees. This model would also provide adequate precautions for other licensees without straining licensee or Commission resources.

As a final matter, Motorola again urges the Commission to consider extending the proposed signal booster regulations to allow routine deployment of signal translators, under certain conditions. Specifically, Motorola urges the Commission to allow the deployment of

signal translators without licensing obligations if the transmit frequency of the translator is also licensed to the licensee on an exclusive basis throughout the coverage area of the translator. In certain circumstances, such as behind sharp terrain features or obstacles, the original frequency can be re-used by a signal booster without detrimental effects on the signal received by a mobile user. However, in other areas where a mobile user receives both the direct and boosted signal, the quality of service provided to the mobile unit could be degraded unless expensive simulcast phasing equipment (and microwave links) are used. This defeats one of the primary benefits of such devices by rendering them uneconomic for certain applications. If, on the other hand, a translator is used, the mobile unit will not experience degrading multipath effects. Thus, for services where a licensee is authorized multiple channels, translators can provide benefits that boosters cannot. And, because the use of translators would be limited in the same manner as signal boosters, these devices do not increase the potential for detrimental interference.

For the foregoing reasons, Motorola urges the Commission to expeditiously adopt the *Notice* proposal to allow the routine use of signal boosters for most land mobile services. In addition, Motorola urges the Commission to increase the power limits for signal boosters, to require some minimal recordkeeping as a prerequisite to the use of signal enhancing devices, and to extend to licensees the benefits of both signal booster and translators. The proposal, as

modified, would significantly benefit the public by providing licensees with an economical, fast, and flexible means for improving coverage, increasing the quality of service, and overcoming propagation anomalies within their service area.

Respectfully submitted,

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